

Note on the classification of the *Dermaptera*.

By **Malcolm Burr**,

B. A., F. E. S., F. L. S., F. Z. S., Eastry, Kent (England).

(With Plate IV.)

In the course of the close examination of a relatively immense amount of material with the object of building up a uniform classification of the Dermaptera out of the empirical arrangement of de Bormans and the half finished revolutionary proposals of Verhoeff, I am gradually beginning to see a system shaping itself. In order that the final arrangement may meet with the approval of the majority of Dermapterists, and in the hope of stimulating criticism I publish the following outline of my scheme as it stands at present.

These notes make no pretence of finality, their avowed object being to invite suggestions in the hope that a comparison of opinions and of experience may facilitate the construction of a system that will win the approval of the greater number, if not all, of the few entomologists who are at present working upon Dermaptera.

I shall eagerly welcome all criticisms, however severe, all notes, observations and suggestions, and I earnestly beg all Dermapterists to come to the rescue and give me the benefit of their opinions and of their suggestions, both on the details and on the general scheme outlined in the following notes.

Some of the characters employed may be unfamiliar to many workers; where necessary I have added a parenthesis explaining them.

There is no doubt that Verhoeff, carried away by his enthusiasm in the first attempt to subdivide the Dermaptera into groups, went too far, and erected too many families.

Taking full advantage of the suggestive work of the erudite German entomologist, I propose to divide the earwigs into the five families as follows:

1. Abdominis segmentum anale in processum deplanatum ac dilatatum, cum pygidio confluens, inter forcipis brachia valde productum. (Corpus valde depressum; antennae multo-segmentatae; scutellum magnum patens.) Fam. 1. *Apachyidae*.
1. 1. Abdominis segmentum anale haud valde productum, processu multo efficiens ¹⁾.

¹⁾ An approach, however, to this condition, is seen in the genus *Gonolabina* q. v.

2. Tarsorum segmentum secundum simplex, cylindricum, haud lobatum.
3. Segmentum ultimum dorsale margine postico libero; pygidium liberum.
4. Femora compressa, carinulata . Fam. 2. *Pygidicranidae*.
4. 4. Femora vix vel haud cromptessa, haud carinulata.
Fam. 3. *Labiidae*.
3. 3. Segmentum anale cum pygidio fustum; pygidium adpressum, verticale¹⁾ Fam. 4. *Labiduridae*.
2. 2. Tarsorum segmentum secundum lobatum.
Fam. 5. *Forficulidae*.

Family I. *Apachyidae*.

This family is so well marked that Verhoeff proposed to separate it into a subdivision under the name of *Paradermaptera*, as against the whole of the rest of the earwigs which he called *Eudermaptera*. I do not consider, however, this drastic treatment necessary. I have recently revised the group (Ann. Mag. N. H. [8] i. p. 51 [1908]) and no further remarks are necessary except to call attention to *A. corticinus* from Ceylon, which, in the less depressed body and quadrate pronotum, affords a link with the normal earwigs. On the strength of these two characters, I propose a new genus for this species under the name *Dendroiketes* n. g., Mr. Green has since shown me a second specimen agreeing exactly with the type, and there is an immature specimen in the Hof-museum in Vienna.

Family II. *Pygidicranidae*.

The compressed and carinulate femora (see fig. 1) afford a very convenient means of limiting this family into a fairly homogenous group. This excludes the genera *Pyragra*, *Echinosoma*, and their allies, which have hitherto been placed near *Pygidicrana*. Their affinities however, are undoubtedly rather with the *Labiduridae*.

The *Pygidicranidae* fall into five subfamilies as follows:

1. Antennae segmentis 15—25; segmento 5 cylindrico, longiori quam latiori.
2. Corpus apterum 1. *Anataelinae*.
2. 2. Elytra semper, alae saepius, perfecte explicata. 2. *Diplatyinae*.
1. 1. Antennae segmentis plus quam 35, segmentis 4—6 brevibus, transversis.

¹⁾ This feature is equally difficult to describe and to illustrate: a glance at the pygidium of any *Labidura* or *Anisotabis*, and then at a *Forficula* will at once render the point obvious.

2. Antennae crassae, segmentis 4—6 latissimis, valde transversis. (Corpus apterum) 3. *Karschiellinae*.
 2. 2. Antennae setaceae, segmentis 4—6 haud valde transversis.
 5. *Pygidicraninae*.

Subfamily 1. *Anataelinae*.

This subfamily includes two isolated monotypic genera, *Anataelia* Bol., from the Canaries, with smooth mesonotum, and *Challia* Burr, from Corea, with keeled mesonotum. In the structure of the antennae and sternal plates, these two genera approach the *Labiduridae*, but their general form and appearance justifies their position in the *Pygidicranidae*.

Subfamily 2. *Diplatyinae*.

This subfamily contains the single genus *Diplatys* Serv. as *Namopygia* Dohrn, certainly, and *Cylindrogaster* Stål, probably, must fall into it. It is a well characterised homogenous group, but the discrimination of the species is subtle. The difficulty is increased by the fact that in addition to the usual sexual characters, the form of the pronotum varies with the sex. It cannot be repeated too often that it is not only useless, but harmful, to describe females alone, as without the male it is quite impossible to range any species in its correct position.

Here, more than in any other group of earwigs, colour is not only untrustworthy, but even misleading.

The Diplatyidae are probably primitive forms. The post-embryonic development of the forceps from segmented caudal setae is a most striking feature.

Of the nine species known by de Bormans, several must be sunk, but recent discoveries have raised the number to over two dozen.

Subfamily 3. *Karschiellinae*.

This group was granted the rank of a family by Verhoeff, but it has close affinities with the *Pygidicraninae*, in spite of many very striking and peculiar features. It includes the two genera *Karschiella* and *Bormansia*, by Verhoeff, with two and three species respectively, all confined to tropical Africa.

The very thick antennae (see fig. 2) and the structure of the sternal plates separate this subfamily very sharply.

The larvae of *Bormansia* have segmented caudal setae, as in *Diplatys*.

Subfamily 4. *Pygidicraninae*.

This subfamily has recently been revised by me (Ann. Mag. N. H. [8] II, p. 382 [1908]). It includes *Tagalina* Dohrn, *Pygidi-*

crana Serv., and the genera which I have separated from *Pygidicrana*, namely *Dicrana*, *Cranopygia*, *Picrania* and *Pyge* and also the apterous *Dacnodes* Burr.

It is represented in all tropical regions and species are fairly numerous.

The three genera *Pyragra*, *Echinopsalis* and *Echinoma* which were placed by Verhoeff in the *Pygidicranidae*, I prefer to place in the *Labiduridae*.

Family 3. *Labiidae*.

The revision of this family is not yet complete and so I hesitate to offer a premature system.

It is allied to the *Forficulidae*, differing in the simple form of the second tarsal segment (see fig. 4). It will include the *Nesogastrinae*, revised recently (Ann. Mag. N. H. [8] i. p. 42 [1908]), with the single genus *Nesogaster*, including eight species, most of which were formerly included in *Labia*. *Nesogastrella* of Verhoeff falls, being founded on an imperfect female of *Labia amoena* Stål., which is a true *Nesogaster*.

It will also include *Strongylopsalis* Burr, with two known species (v. Burr l. c. p. 49).

A new genus and subfamily must be erected here for the anomalous form *Labia tenuipes* Burr, from Peru (Ann. Mag. N. H. [7] XVI, p. 487 [1905]).

Spongiphora and *Labia* will together form another subfamily; both these extensive genera include heterogeneous material and several new genera must be formed, for the following species must probably be separated into new genera: *Spongiphora frontalis* Dohrn, *remota* Burr and *divergens* Burr, *Spongiphora decipiens* Kirby and *sphinx* Burr, *Spongiphora rogersi* Borm. and *geayi* Burr, *Labia canaca* Burr, with several of the old species of *Spongiphora*, *Labia paraguayensis* Caudell, *arachidis* Yers. and *rotundata* Scudd., *Mecomera kervillei* Burr and *weissi* Burr.

The depressed forms *Sparatta*, *Platylabia*, *Chaetospaonia* and *Mecomera*, will probably require a new subfamily.

The old genus *Sphingolabis* Borm., with *S. semifulva* Borm. (= *furcifera* Borm.) as type, including *S. hawaiiensis* Borm. will probably be placed near here.

This affinity was unconsciously recognised by the Bormans, when he described „*Sparatta semifulva*“ and „*Sphingolabis furcifera*“, which are the two sexes of one species; also his „*Sphingolabis borneensis*“ is a *Chaetospaonia*.

The affinities of the *Labiidae* are with the *Forficulidae*, the essential distinction being the structure of the tarsi.

Family 4. *Labiduridae*.

This important family is well characterised by the form of the pygidium which is generally large, but not very prominent, as its upper portion is almost vertical and fused with the posterior margin of the last dorsal segment. The junction is marked by a sharp fold in all cases except the aberrant *Gonolabina kuhlgatzi* Verh., and consequently this junction is invisible from above.

For division into subfamilies I suggest at present the following arrangement :

Table of subfamilies.

1.	Mesosternum valde angustatum . . .	1. <i>Allostethinae</i> .
1. 1.	Mesosternum haud angustatum.	
2.	Prosternum angustatum	2. <i>Esphalmeninae</i> .
2. 2.	Prosternum haud angustatum.	
3.	Corpus cylindricum, apterum; antennae paucisegmentatae; prosternum elongatum, angustum . . .	3. <i>Brachylabinae</i> .
3. 3.	Corpus plus minus depressum; antennae longae, multi-segmentatae; prosternum haud plus quam duplo longius quam latius.	
4.	Metasternum postice sinuatum	4. <i>Pyragrinae</i> .
4. 4.	Metasternum postice truncatum vel rotundatum.	
5.	Mesosternum truncatum	5. <i>Labidurinae</i> .
5. 5.	Mesosternum rotundatum	6. <i>Psalinae</i> .

Subfamily 1. *Allostethinae*.

This is for the single genus *Allostethus* Verh., characterised by the strongly narrowed pro- and meso-sternal plates (see fig. 3). There are several species described by Verhoeff but probably two or three are mere varieties. The type is *A. indicum* Hagenb.

Subfamily 2. *Esphalmeninae*.

This is for *Esphalmenus* Burr, which as I show elsewhere, is for the *Gonolabidae* as understood by Verhoeff, that is, those species with strongly dilated abdomen and narrowed prosternum. The latter feature precludes *G. javana* Borm., the type of *Gonolabis*, which is placed near to *Anisolabis*.

We range here the aberrant *Gonolabina kuhlgatzi* of Verhoeff.

Subfamily 3. *Brachylabinae*.

This well marked group has recently been revised (Ann. Mag. N. H. [8] II, p. 246 [1908]) and no further remark is necessary here, beyond a repetition of the fact that the *Isolabidae* of Verh. are the same thing as the *Brachylabinae*.

Subfamily 4. *Pyragrinae*.

This group, with *Pyragra* Serv., *Echinopsalis* Borm., *Pyragropsis* Bor., *Echinosoma* Serv. and *Arthroderus* Caudell, has certain affinities with the *Pygidicraminae*, but in my opinion, the balance is in favour of their inclusion in the *Labiduridae*. In the form of the feet and organs of flight and above all, of the pygidium, they agree with the *Labiduridae*.

Subfamily 5. *Labidurinae*.

For *Labidura*, *Forcipula* and *Tomopygia* and also for *Demogorgon* Kirby, if that genus be proved to be good. Its chief character, absence of wings, is insufficient to justify generic rank.

Subfamily 6. *Psalinae*.

This includes several genera which are all closely related to each other, namely *Gonolabis* Burr (nec Verhoeff), *Anisolabis* Fieb. and *Psalis*¹⁾ Serv. The latter only differs from *Anisolabis* in its well developed organs of flight. *Carcinophora* Scudd., seems to coincide with *Psalis*.

The exact position of *Labidurodes* is doubtful. It probably comes here.

A new genus is required for *Anisolabis colossea* Dohrn with lobed mesternum, and also for those species of *Anisolabis* which have rudimentary elytra. For the latter I now propose the name *Borellia* n. g., for those species of *Anisolabis* which have rudimentary elytra; these are not generally contiguous at any point and are usually soldered to the pronotum. It affords me great pleasure to dedicate this genus to my good friend Dr. Alfredo Borelli, whose numerous works on the Dermaptera-Fauna of Africa and South America constitute a very valuable addition to our knowledge of the group.

Anisolabis moesta Géné, may be taken as the type of this new genus which will also include the following species: *A. ambigua* Borelli (C. America), *A. janairensis* Dohrn (Brazil), *A. andreinii* Bor. (Eritrea), *A. greeni* Burr (Ceylon), *A. peruviana* Borm. (Peru), *A. armata* Borelli (C. America), *A. tasmanica* Borm. (Australasia), *A. stáli* Dohrn (Oriental) and *A. annandalei* Burr (India), but not *A. cincticollis* Gerst., which is a *Psalis*.

Family 5. *Forficulidae*.

This family was revised by me a few years ago (Tr. ent. Soc. London, 1907, p. 91) but the forms are so numerous and

¹⁾ *Psalis indica* Hagenb., its allies is removed to *Allostethus* Verh. q. v.

so varied, new species so frequently being described, new characters assuming importance, and the passage from genus to genus so gradual that I have already been obliged to modify the arrangement then suggested and further modification will certainly be necessary. In the meantime, I tentatively put forward the following scheme:

Table of subfamilies:

1. Tarsorum segmentum 2 angustum, sub 3 in lobum angustum productum (see fig. 5).
2. Abdomen valde depressum ac deplanatum; pronotum antice fortius angustatum 1. *Auchenominae*.
2. 2. Abdomen convexum, haud valde deplanatum; pronotum antice vix angustatum 2. *Chelisochninae*.
1. 1. Tarsum segmentum 2 latum, utrinque in lobum latum dilatatum, cordiforme (see fig. 6).
2. Corpus apterum, elytris nullis (corpus saepius dilatatum, sat depressum) 3. *Chelidurinae*.
2. 2. Corpus alatum (alis saepius abbreviatis; elytris perfecte explicatis, vel abbreviatis, vel interdum rudimentariis).
3. Meso- et metasterna lata, transversa (corpus latum, depressum, saepius fortiter dilatatum) 4. *Anechurinae*.
3. 3. Meso- et metasterna subquadrata vel paullo latius quam longius, haud valde transversa.
4. Corpus plus minus depressum.
5. Abdomen medio fortiter dilatatum, apice plus minus angustatum. 5. *Ancistrogastriinae*.
5. 5. Abdomen medio paullo dilatatum, fere vel omnino parallelum. 6. *Forficulinae*.
4. 4. Corpus vix depressum, supra convexum, plus minus dilatatum, vel lateribus parallelis. . . . 7. *Opisthocosmiinae*.

Subfamily 1. *Auchenominae*.

Agreeing with the *Chelisochninae* in the form of the tarsi, but differing in the remarkably depressed body, the restricted and rare genus *Auchenomus* deserves separation into a subfamily.

Subfamily 2. *Chelisochninae*.

I have not felt obliged to alter materially the arrangement suggested in the paper quoted above.

Subfamily 3. *Chelidurinae*.

This subfamily remains unchanged except for the inclusion of some remarkable new Central Asian forms described by Semenov.

Subfamily 4. *Anechurinae*.

The arrangement here is modified. *Timomenus* Burr, is removed to the *Opisthocosmiinae*. *Odontopsalis* will probably coincide with *Anechura*.

Anechura elongata Borm. will probably require a new genus when better known. *Anechura torquata* Burr, may require a new genus representing the transition to *Allodahlia*; a new genus will also probably be required for *Pseudochelidura biolleyi* Bor., *P. vara* Scudd., another for *Ps. schmitzii* Bor and *A. cavalli* Bor., and another for *Ps. edentula* Woll.

A new genus is required for *A. jeae* Borm., I propose the name *Homotages*. The elytra have no keel, the second tarsal segment is much longer than in its allies and is scarcely dilated and more than half as long as the third; the first segment is unusually long, equalling the other two united. The pronotum is of the type occurring in the *Chelisochinae*, to which subfamily this genus is a transition. The pronotum is decidedly longer than broad, and is distinctly widened posteriorly.

Pseudochelidura analis differs from the other species in having a keel on the elytra; this is a very distinctive feature, shared in this family by *Allodahlia*, but *P. analis* differs from that genus in the short, quadrate elytra, which are obliquely truncate at the posterior margin. On the strength of these characters, I propose the new generic name *Lithinus*; no other known species is included.

Subfamily 5. *Ancistrogastrinae*.

Poverty of material has hitherto prevented me from working sufficiently at this group. *Skendyle* Burr must probably be moved here.

Subfamily 6. *Forficulinae*.

The arrangement of 1907 is again modified. I would include here *Diaperasticus* Burr, now restricted to its type, *D. sansibaricus* Karsch; removing *F. erythrocephala* Oliv., to *Flaannon* Burr.

Apterygida Westw., now only includes its type, *albipennis* Mag., as *A. arachidis* Yers., is undoubtedly a *Labia*. *Doru* Burr is placed here.

Subfamily 7. *Opisthocosmiinae*.

This group is difficult to classify; I modify the arrangement proposed in 1907, including here *Eudohrnia* Burr, *Neolobophora* Scudd., *Emboros* Burr, *Cosmiella* Verh., *Liparura* Burr, *Obelura*

Burr, *Eparchus* Burr, *Hypurgus* Burr, *Skalistes* Burr, *Kleter* Burr, *Timomemus* Burr, *Rhadamanthus* Burr, *Kosmetor* Burr.

Also two new genera, which will be dealt with later.

Explanation of Table IV.

- Fig. 1. Foot of *Anataelia canariensis* Bol.
 „ 2. Antenna of *Bormansia impressicollis* Verh.
 „ 3. Sternal plates of *Allostethus indicum* Hagenb.
 „ 4. Foot of *Labia mucronata* Stål.
 „ 5. Foot of *Hamaxas papuensis* Burr.
 „ 6. Foot of *Elauon erythrocephalus* Ol.
 „ 7. Foot of *Homotages feae* Borm.

Vier neue australische Hemipteren-Gattungen.

Von E. Bergroth, Fitchburg, Mass. (U. S. A.).

(Mit 1 Figur im Text.)

Familie Pentatomidae.

Tinganina nov. gen.¹⁾

Pterygo-dimorpha. Caput cum oculis longitudine paullo latius, parte anteoocularem paullo transversa, ab oculis fere usque ad medium angustata, deinde subparallela, vertice subdeplanato, jugis tylo longioribus, ante hunc per spatium sat longum contiguus, latere externo reflexis, integris, subacutis, apice late oblique subsinuato-truncatis, oculis stylatis, valde prominentibus, transversis, paullo antrorsum et sursum vergentibus, ocellis pone lineam inter marginem posticum oculorum fictam positus, inter se quam ab oculis paullo latius distantibus, bucculis ubique aequae altis sed antice in dentem, postice in lobulum deflexis, tuberculis antenniferis e supero distinguendis, extus spina porrecta valida armatis, antennis quinque-articulatis, articulo primo apicem capitis paullulum superante, secundo brevissimo, rostro coxas posticas paullulum superante, articulo primo bucculis vix longiore, tertio secundo brevior. Pronotum leviter declive, apice capite cum oculis latius, margine apicali medio modice sinuato, pone oculos truncato, marginibus lateralibus anticis serratis vel erosis, leviter reflexis, marginibus lateralibus posticis pone angulos laterales

¹⁾ *Tinganina* hieß die letzte überlebende von den ausgestorbenen Ureinwohnern Tasmaniens. Sie starb 1876.